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Retroactive Inhibition in Slow and Fast Learners as a Function of Temporal Position of the Interpolated Task.

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RETROACTIVE INHIBITION IN SLOW AND FAST LEARNERS AS A FUNCTION OF TEMPORAL POSITION OF THE INTERPOLATED TASK

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ABSTRACT

A number of studies have shown that new learning, or activity, may have a detrimental effect upon the retention of earlier learned habits. Since Müller and Pilzecker's study, the relationship between the temporal position of interpolated treatment and the magnitude of the decrement in retention has been one of the important problems in the investigation of retroactive inhibition. The results from several recent experiments with animals have supported Müller and Pilzecker's assumption that the temporal position of interpolated treatment is one of the major variables determining the magnitude of retroactive inhibition, and that the immediate post-learning period is most critical. Analogous studies with human subjects have been scattered and much less systematic. In addition, the results in many instances are equivocal. The purpose of the present study was to investigate the effects of the temporal position of interpolated treatment upon retroactive inhibition, in human subjects with widely varying intellectual abilities, using time intervals similar to those which have yielded positive results with animals.

Test procedure consisted of the typical retroactive inhibition design. Subjects learned (a) a 10-word list of familiar nouns, (b) a second 10-word list of similar familiarity 30 sec., 5 min., 30 min., or 2 hr. later, and (c) then received a retention test on the first list 24 hours following initial learning. Control groups of both slow and fast learners were not given the interpolated learning task. In each instance subjects were given massed practice until a criterion of one errorless trial was reached. A total of 75 mental defectives and 75 normal high school students served as subjects.

The results showed that interpolated treatment produced a significant decrement in retention of serial verbal learning. However, varying temporal positions of interpolated treatment did not differentially affect retroactive inhibition. Comparisons of savings scores revealed that all treatments were significantly different from controls but not from each other. These results were discussed in terms of both a perseveration theory and an interference theory of retroactive inhibition. Slow learners evidenced considerably less retroactive inhibition. However, an analysis of covariance revealed that this difference was not significant when the differential number of trials-to-criterion for the two groups on original learning was considered. The interaction of intelligence level and temporal position was not significant. Verbal learning ability was found to be significantly related to test intelligence ($\underline{r} = -.64$). Typical serial position effects for fast and slow learners were found for original and interpolated learning.

INTRODUCTION

Many investigations have shown that new learning, or activity, may have a detrimental effect upon the retention of earlier learned habits. Usually such effects are referred to as retroactive inhibition (RI) and, as is well-known, were first systematically investigated by Müller and Pilzecker (22) around 1900. Since this time RI has been the subject of extensive laboratory study. Among the more important parameters determining RI, as listed in reviews by Britt (2) and Swenson (30), are degree of original learning (OL), similarity of the interpolated treatment (IT) to that of OL, and the temporal position of the treatment interpolated between OL and a retention test. The last parameter, with which the present investigation is concerned, has been the subject of several recent experiments with animal Ss. Analogous studies with human Ss have been scattered and much less systematic. In addition, the results in many instances are equivocal.

In the original study of RI, Müller and Pilzecker (22) concluded from their results in verbal learning that RI is an inverse function of the time interval between OL and IT. It was further noted that after six minutes IT had negligible effects. On the basis of these findings they postulated a perseveration theory of learning which holds that there is post-learning neural perseveration which tends to consolidate a learning trace. Any activity which interferes with this perseveration would retard learning, i.e., produce a decrement in a retention test. Other studies with human Ss have failed to investigate systematically the interval presumed to be most critical by these investigators. Skaggs (28) and Newman (23) have reported findings which do suggest that the immediate post-learning interval is more critical. Negative findings have been reported by Robinson (26) and Archer and Underwood (1) which indicate that the temporal position of IT is not related to RI. Studies by Postman and Alper (25), Sisson (27), Houlahan (12), McGeoch (19), Whitley (38), and Howland (13) have yielded paradoxical results. Some indicate that IT just before the retention test is most detrimental whereas others indicate the middle or beginning of the interval. However, these studies all suggest that the effect is not independent of methodological variables as well as amount and nature of OL and IT. The divergent results reported in the literature have been obtained under different experimental conditions with various materials which make generalization difficult. The apparent contradictions may be partly due to the fact that only isolated points of interpolation were chosen for comparison.

Several recent investigations using animal Ss have been designed in accordance with the belief that the immediate post-learning period is most critical, as postulated by Müller and Pilzecker. Duncan (5) gave rats an electroconvulsive shock (ECS) 20 Sec., 40 sec., 1 min., 4 min., 15 min., 1 hr., 4 hr., or 14 hr. after the termination of each daily training trial on an avoidance conditioning problem. The degree of RI was found to be inversely related to the time interval between the termination of each trial and onset of the convulsion. However, an ECS given 1 hr. or more after termination of each trial did not cause a significant memory loss. Gerard (8) using a maze learning technique, obtained essentially the same results, with the exception that administration of an ECS after 1 hr. still had some retarding effect.

Thompson and Dean (33) trained rats in a single session to a criterion on a two-choice discrimination problem and introduced an ECS 30 sec., 2 min., 1 hr., or 4 hr. later. The results showed that the ECS did produce a detriment in retention if given up to 1 hr. following learning, although the 4 hr. treatment had no effect. Thompson and Pryer (34), in a study similar in design to that of Thompson and Dean, found that the inhibitory effects of anoxia are not comparable to those of ECS. An ECS given 1 hr. after learning produced a significant deficit in retention, whereas anoxia had no effect if administered as much as 15 min. after learning. However, the magnitude of inhibition was proportional to the OL-IT interval for the 30-sec. and 2-min. animals. The differential effects of ECS and anoxia may have been due to intensity differences. Hayes (10) found that the effects of anoxia and ECS upon maze learning in rats are comparable, although the animals in his study developed convulsions whereas those in the Thompson and Pryer study did not.

The results from the foregoing animal studies are consistent with Müller and Pilzecker's assumption that the temporal position of IT is one of the major variables determining the magnitude of RI, and that the immediate post-learning period is most critical. A review of the literature indicates that a definitive test of this relationship with humans, analogous to those with animals, has not been made.

The purpose of the present study was to investigate the effects of the temporal position of IT upon RI in human serial verbal learning. The time intervals used are similar to those which have yielded positive results with animal Ss. Thus some evidence bearing on the Müller and Pilzecker hypothesis was obtained. A second purpose was to investigate RI in Ss with widely varying intellectual abilities. Studies by Lahey (14) and Cassel (4) bear on this problem.

In the Lahey study (14), 3,434 children from grades 3 through 10 were tested in a typical RI design on serial verbal learning. The results indicated that degree of inhibition was inversely related to IQ. Cassel (4) tested three groups of Ss--normal children, familial and non-familial mental defectives--equated for MA, on various serial learning tasks. The normal Ss learned significantly faster than the mental defectives on two preliminary tasks. However, there were no significant differences on the main learning and on the interpolated learning list. All groups showed comparable amounts of RI. Of course, these Ss, matched for MA, are presumed to have equivalent "mental ability." Therefore, RI as a function of intelligence level was not specifically tested. In the present experiment both normals and mental defectives are used as Ss providing both slow and fast learners.

METHOD

Subjects. The "slow learner" Ss were 75 mental defectives (25 males and 50 females, 15 Negroes and 60 whites) from the State Colony and Training School, Pineville, La. The "fast learners" were 75 white students (37 males and 38 females) from Colfax High School, Colfax, La. Ss with gross neuropathology (mongolism, cranial anomalies, etc.), motor or sensory disabilities, and those unable to read the word lists were excluded. The intellectual level of the fast learners was determined by the Terman-McNemar Group Test of Mental Ability (31), and that of the slow learners with the Revised Stanford-Binet (32). All Ss had one previous serial verbal learning experience (6). The mental defective and high school groups were each divided into five experimental groups of 15 Ss, hereafter called the 30-sec., 5-min., 30-min., 2-hr., and control groups. The groups within each intelligence level were matched as to learning ability on the basis of performance on prior serial verbal learning. Descriptive data for the various groups are presented in Table 1 which shows that all groups were fairly well equated for IQ, CA, and initial learning ability.

Apparatus. Two word lists, each consisting of 10 highly familiar nouns [AA rating in the Thorndike-Lorge word

TABLE I

Means and SD's on IQ, CA, and Initial Learning Ability for all Treatment Groups

A. Defectives (Slow Learners)

		30-sec. gp.	5-min. gp.	30-min. gp.	2-hr. gp.	Control gp.	Total Sample
	N	15	15	15	15	15	75
IQ[a]	Mean	57.8	57.8	59.2	62.9	59.7	59.5
	SD	11.09	8.46	9.68	9.36	12.75	10.55
CA (yr.)	Mean	21.6	22.7	21.1	24.3	20.8	22.1
	SD	4.63	5.36	3.36	5.42	2.68	4.55
Initial[b] Ability	Mean	29.1	31.7	28.3	28.7	29.7	29.5
	SD	12.87	14.25	11.55	15.26	13.96	13.69

B. Normals (Fast Learners)

		30-sec. gp.	5-min. gp.	30-min. gp.	2-hr. gp.	Control gp.	Total Sample
	N	15	15	15	15	15	75
IQ[c]	Mean	102.7	104.3	102.8	102.5	101.2	102.7
	SD	9.10	10.17	9.63	11.93	10.86	10.43
CA (yr.)	Mean	16.0	16.4	15.6	15.9	16.4	16.1
	SD	1.34	1.48	1.25	1.23	1.10	1.33
Initial Ability	Mean	12.5	13.1	13.0	12.6	13.3	12.9
	SD	3.30	3.79	3.79	3.44	3.07	3.50

[a]1937, Revised Stanford Binet (32).

[b]Trials-to-criterion on a previous serial verbal learning task.

[c]Terman-McNemar Group Test of Mental Ability (31).

count (35)], were used as OL and IT tasks. Ten different orders of each list were used so that the words appeared equally often in each serial position. This was done in order to minimize collusion and make possible the investigation of serial position effects. The lists were typed in black capitals on white paper tape and presented by a memory drum (Gerbrand model M1) which exposed a word for 2 sec. with an intertrial interval of 20 sec. Words from both lists were printed in black capitals on white 3x5 "flash" cards which were used to ensure readability.

Procedure. A 2x5 factorial design provided the occasion for testing the effects of 4 different temporal points of IT; 30 sec., 5 min., 30 min., and 2 hr.; in both slow and fast learners. The 15 Ss in each cell of both groups were matched on an individual basis according to previous learning ability on a similar task (6). In practice, this was accomplished by assigning at random blocks of five matched Ss to the five treatment conditions. This procedure yielded highly matched Ss across the five-cell dimension.

Test procedure consisted of the typical RI design. Ss learned (a) a 10-word list, (b) a second 10-word list either 30 sec., 5 min., 30 min., or 2 hr. later, and (c) then received a retention test on the first list 24 hrs. following the initial learning experience. Control groups of both slow and fast learners did not receive IT. In each instance Ss were given massed practice until a criterion of one errorless trial was reached. The 10 possible serial orders of both the initial and the interpolated lists were assigned at random to the 15 Ss within cells.

Ss, except those in the 2-hr. group who were permitted to attend classes or return to their dormitories, spent the OL-IT interval seated in an adjoining room with instructions to relax. No control was maintained over S's activity between IT and the retention test.

After a brief discussion with S designed to establish rapport, the following instructions, which had been memorized by E, were given:

> In this game you are to memorize some words. First I want you to read these words aloud. (E shows S 10 flash cards, one at a time, with a word from the OL list printed on each card. Ss unable to read all the words were excluded from the experiment). These words are all on this machine. When I turn the machine on, you will be able to see one word at a time in this little window. These two stars you see in the window now (E points) mean that the first word is coming up next. At first you are to read aloud each word you see in the window. As you read the words try to remember them. Then, when you see the stars again, try to remember what word comes next. Say it aloud. If you do not remember what word comes next you may guess. When you miss a word, read it aloud when you see it. Remember to keep looking at this little window, so you will be sure to say the word before you see it in the window. We will play until you get all the words correct. Do you have any questions?

Similar instructions were given for IT, and the flash card test was again utilized. Encouragement was given throughout learning but no additional information was offered once the trials began. Occasionally, it was necessary to repeat parts of the instructions when it became obvious that they were misunderstood. Trials-to-criterion and errors were recorded for all learning sessions.

On the retention test the instructions were: "Remember the game we played yesterday? Today we are going to play this game again. We will use the same words and see how fast you can learn them this time." Of course, flash cards were not used in this instance.

RESULTS

Though Ss were matched on the basis of previous learning on a similar task, small differences existed between the matched groups in OL. In order to determine whether these differences were statistically significant, a 2x5 analysis of variance was performed. A Bartlett's test (7, p. 195) revealed that the variances were heterogeneous. Since transformations of the type Y=f(X) were not effective in achieving homogeneity of variance, C-scores (9, p. 302), an "area transformation," were used in the analysis. Table II presents a summary of this analysis. As expected, only the differences between fast and slow learners were significant.

Per cent savings scores for trials-to-criterion and total errors were computed according to Osgood (24, p. 557). Mean per cent savings in trials-to-criterion are shown graphically for all groups in Fig. 1, and total errors are presented in Fig. 2. A Bartlett's test demonstrated that the variances between groups for both trials-to-criterion and total errors were heterogeneous. Thus, these data also were transformed to C-scores. Summaries of the 2x5 analyses of variance for both measures are presented in Tables III and IV.

For per cent savings in trials-to-criterion only the F for fast vs. slow learners reached statistical significance.

TABLE II

Analysis of Variance for Trials-to-Criterion (C-scores) on OL

Source	*df*	*MS*	*F*
Between *S*s	29		
Fast vs. Slow Learners (A)	1	319.70	56.99**
Error (b)	28	5.61	
Within *S*s	120		
IT Groups (B)	4	0.88	0.66
Interaction (A x B)	4	0.70	0.52
Error (w)	112	1.34	
Total	149		

**p .01

FIGURE 1

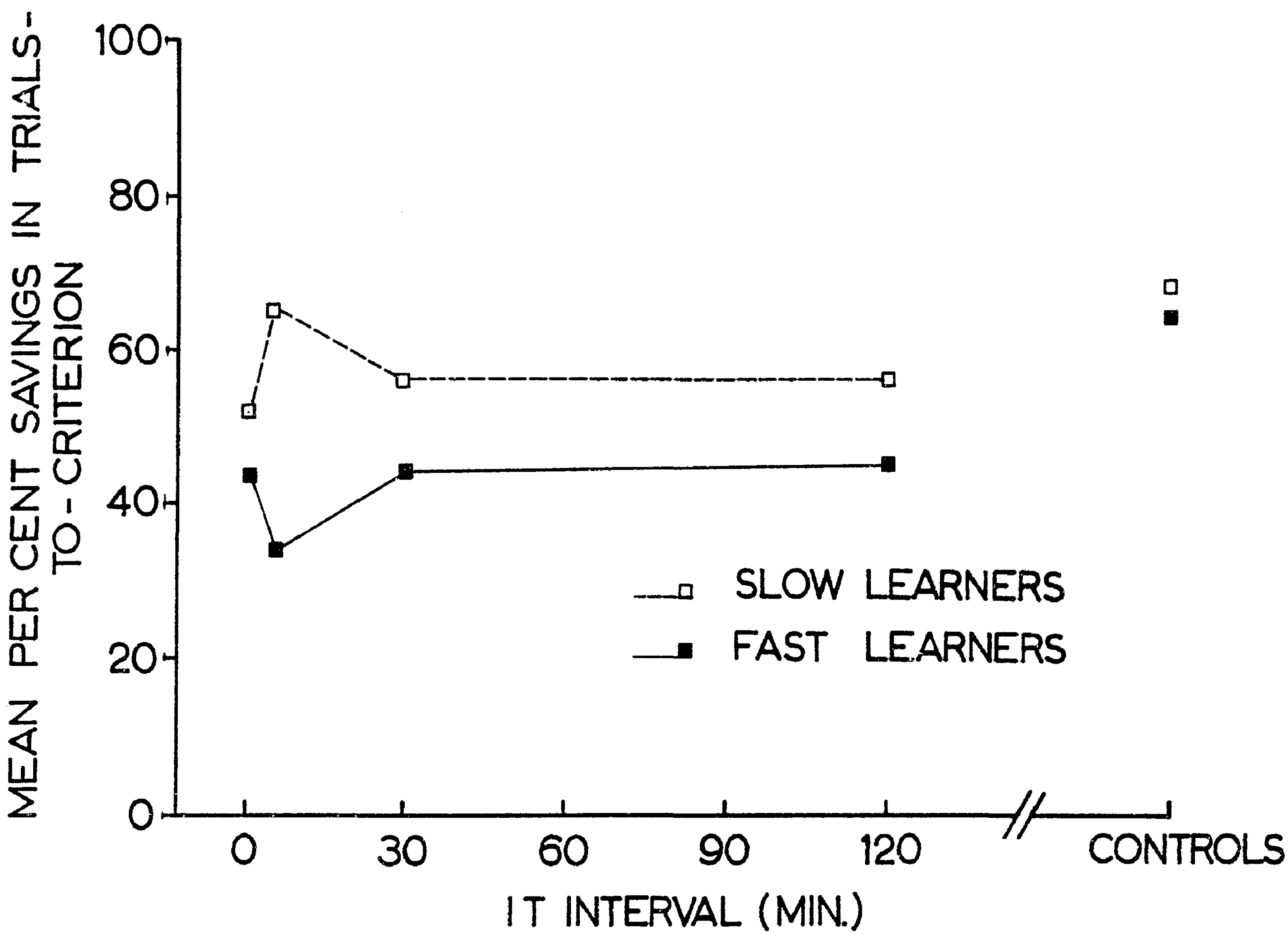

MEAN PER CENT SAVINGS IN TRIALS-TO-CRITERION
100
80
60
40
20
0
0
30
60
90
120
CONTROLS
IT INTERVAL (MIN.)
SLOW LEARNERS
FAST LEARNERS

FIGURE 2

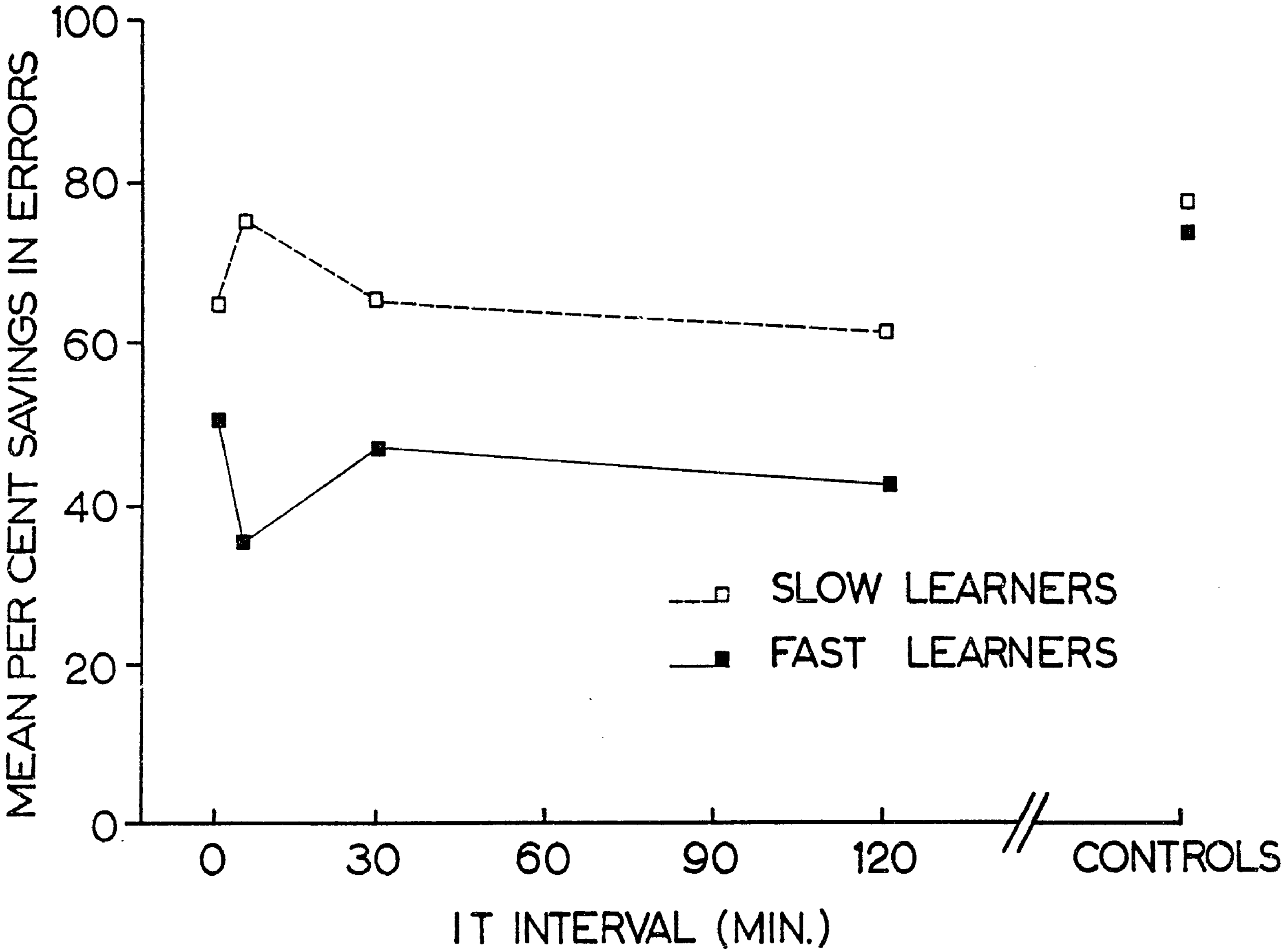

MEAN PER CENT SAVINGS IN ERRORS
100
80
60
40
20
0
0
30
60
90
120
CONTROLS
IT INTERVAL (MIN.)
SLOW LEARNERS
FAST LEARNERS

TABLE III

Analysis of Variance of Per Cent Savings (C-scores)

in Trials-to-Criterion

Source	*df*	*MS*	*F*
Between *S*s	29		
Fast vs. Slow Learners (A)	1	24.80	8.16**
Error (b)	28	3.04	
Within *S*s	120		
IT Groups (B)	4	8.32	2.00
Interaction (A x B)	4	3.08	0.74
Error (w)	112	4.15	
Total	149		

**p .01

TABLE IV

Analysis of Variance of Total Error Per Cent Savings (C-scores)

Source	*df*	*MS*	*F*
Between *S*s	29		
Fast vs. Slow Learners (A)	1	66.70	20.52**
Error (b)	28	3.25	
Within *S*s	120		
IT Groups (B)	4	22.18	7.22**
Interaction (A x B)	4	3.58	1.17
Error (w)	112	3.07	
Total	149		

**p .01

However, inspection of Fig. 1 does reveal differences between IT groups, and a more sensitive test of these differences, an analysis of covariance, was performed in which OL data were treated as a pretest. The assumptions for the use of this test, as listed by Lindquist (16, p. 323) were met. Table V summarizes this analysis. In this instance, the significant difference found between fast and slow learners in the analysis of unadjusted data proved to be attributable to initial differences in performance rate rather than RI <u>per se</u>. However, it should be pointed out that the <u>F</u> of 3.97 approached significance at the .05 level (<u>F</u> of 4.21 was required for significance with 1 and 27 <u>df</u>). The differences between the adjusted means for the IT groups were statistically significant, though the interaction was not.

Further comparisons between the adjusted group means (fast and slow learners combined) were made by means of <u>t</u> tests (16, p. 327). In Fig. 3 adjusted mean C-scores for savings in trials are plotted as a function of IT interval for both fast and slow learners. Table VI presents <u>t</u> values based on the combined data. All IT groups, except the 30-sec. gp., were significantly lower than the controls. The <u>t</u> for the 30-sec. vs. the control gp. fell just short of significance. None of the other possible comparisons revealed significant differences. It was apparent from Fig. 3 that differences existed between savings scores for fast and slow learners even after adjustment of the scores was made.

TABLE V

Analysis of Covariance of Per Cent Savings (C-scores) in Trials-to-Criterion Adjusted for Performance Differences in OL

Source	df	Adjusted MS	F
Fast vs. Slow Learners (A)	1	6.20	3.97
Error (b)	27	1.56	
Total	28		
IT Groups (B)	4	11.40	3.13*
Error (w)	111	3.64	
Total	115		
Interaction (AXB)	4	3.30	0.91
Error (w)	111	3.64	
Total	115		

*p .05

FIGURE 3

ADJUSTED MEAN C-SCORES FOR
SAVINGS IN TRIALS

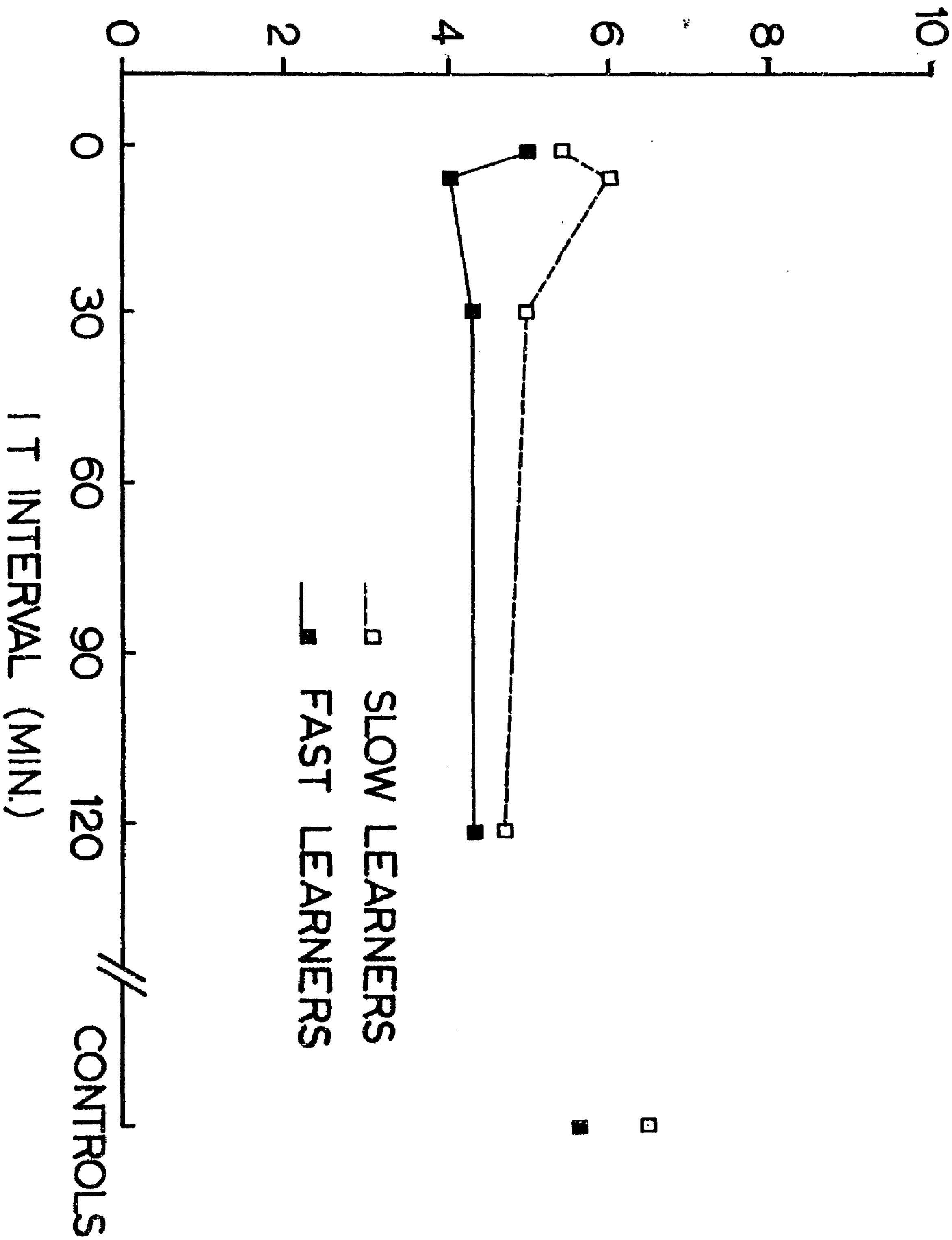


TABLE VI

Values of *t* Obtained from Comparisons of Adjusted Means for IT Groups (all *df* = 29)

	IT GROUPS				
	30 sec.	5 min.	30 min.	2 hr.	Control
Adjusted Mean Savings (C-scores)	5.16	5.00	4.64	4.47	6.13
30 sec.	----	0.324	1.053	1.394	1.968[a]
5 min.			0.730	1.073	2.287*
30 min.				0.345	3.010**
2 hr.					3.340**
Control					-----

[a] *t* = 2.045 required for significance at .05 level

***p* .05

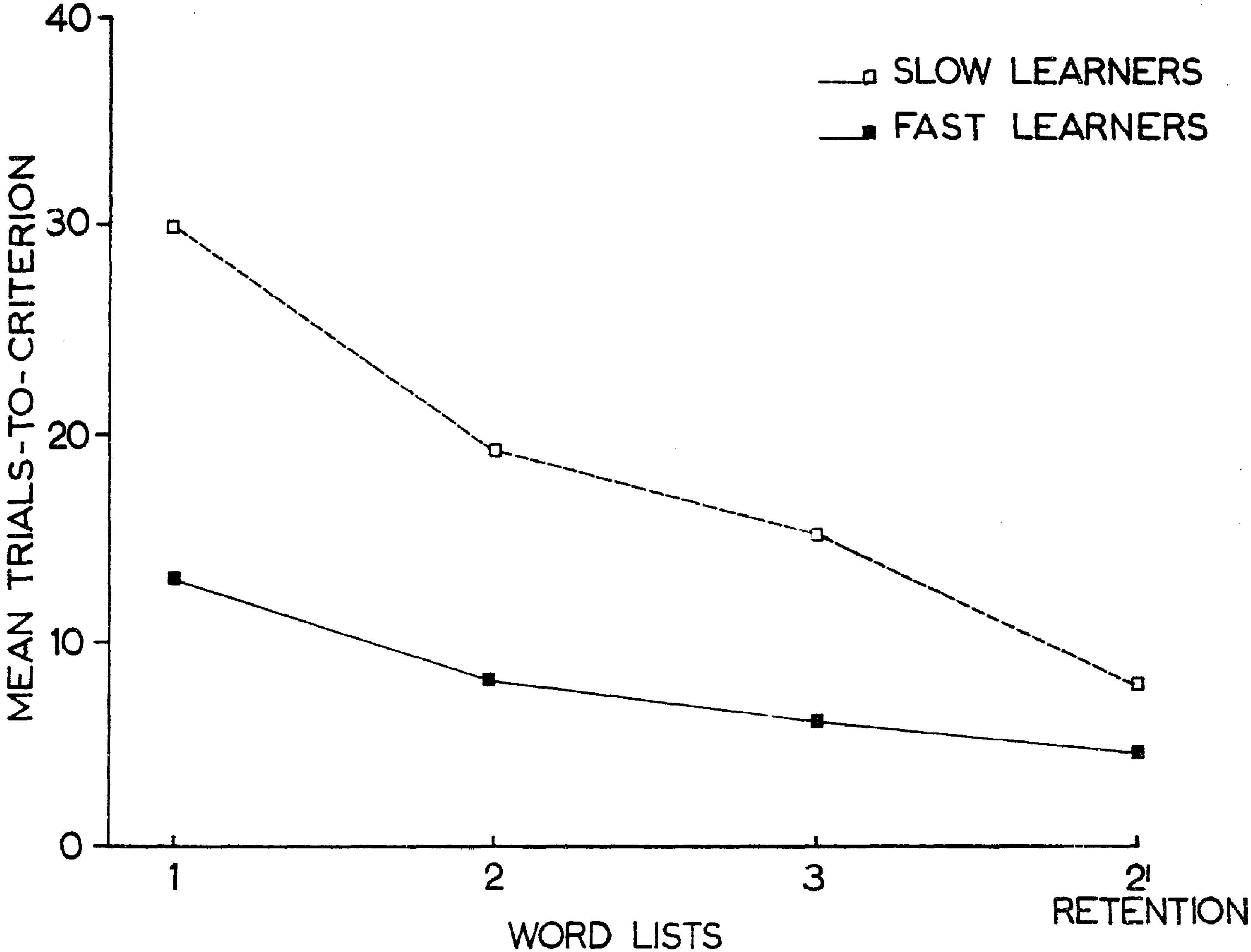
****p* .01

Since these differences did approach significance, comparisons between the various IT groups were also made for fast and slow learners independently. For fast learners only the 5-min. gp. proved to be significantly lower than the control gp., although the comparisons of the 30-min. and 2-hr. gps. with the control gp. approached significance. For slow learners both the 30-min. and 2-hr. gps. were significantly lower than the control gp., while the differences between the 5-min. and 2-hr. gps. approached significance.

Analysis of the second dependent variable, total-error per cent savings, yielded similar results. The analysis summarized in Table IV showed significant differences between IT treatments. Of course, the differences between fast and slow learners were highly significant. The interaction was not significant. An analysis of covariance was not applied to these data since the assumption of homogeneity of regression underlying the test could not be met. The Pearson correlation (*r*) between savings in trials and total error savings was .87. Inspection of the total error data in graphic form showed very similar trends to that of trials-to-criterion. Furthermore, *t* tests between IT groups, analogous to those performed on the savings in trials, yielded similar results. Thus, total error data are not described further.

Figure 4 graphically compares trials-to-criterion for fast and slow learners on three different word lists as well

FIGURE 4


SLOW LEARNERS
FAST LEARNERS
MEAN TRIALS-TO-CRITERION
40
30
20
10
0
1
2
3
2'
RETENTION
WORD LISTS

as the retention test. List 1 is for naive _Ss_ [from the Ellis _et al_. study (6)]; list 2 is the OL list in the present study; and list 3 is the IT list. A learning-set trend is apparent in these data. An _r_ of -.64(N=150) and an eta of .66 were obtained between intelligence (IQ) and trials-to-criterion on OL. A test of linearity (9, p. 320) yielded a X^2 value of 4.70 (_df_=9) which was not statistically significant. Therefore, an hypothesis of rectilinearity is tenable. The _r_ of -.64(σ_r=.048) was significantly different from zero at the .01 level. These results compare favorably with those reported by Ellis _et al_., although they reported a curvilinear relationship. Typical serial position effects for fast and slow learners were found for OL and IT. The curve for fast learners was much less bowed and, overall, showed fewer errors in each serial position.

DISCUSSION

The results of this study showed that IT (learning a second list of words) produced a significant decrement in retention of serial verbal learning. However, the temporal position of IT did not differentially affect RI when given within two hours after OL. Comparisons of savings scores revealed that all treatments were significantly different from controls but not from each other.

These results seem to indicate that the degree of RI is independent of the temporal position of IT and appear to be evidence against a perseveration theory. However, at least one consideration forbids acceptance of such a conclusion at the present time. It is possible that the nature and intensity of the IT used in the present study may not have been sufficient to disrupt the perseverative process. Thompson and Pryer (34) have suggested that a transitory increase in neuronal metabolism might underlie this process. Animal studies (5, 8, 33, 34), cited in support of a perseveration theory have used either ECS or anoxia as an interpolated activity. Both ECS and anoxia are known to produce a state of cerebral anoxia that is capable of interfering with neuronal metabolism.

An evaluation of the literature indicates that no single factor or theory is sufficient to account for RI.

If ECS or anoxia had been used as IT in the present paper it is quite conceivable that the various temporal positions utilized might have produced differential results. However, as the data stand, they are perhaps, better handled by a transfer theory which attributes RI to interference between activities and makes no assumptions regarding the temporal position of IT. The factors which are responsible for loss in retention in a given investigation seem to depend in part upon the materials used and the procedures followed.

A widely accepted "dogma" in psychology is that the faster learner retains more than the slower learner. However, at least two investigations cast doubt on this generalization. Both Luh (17) and Leavitt (15) have noted that in verbal learning fast learners retain more after short intervals, but with an increase in the interval between OL and relearning, there is a shift in superiority from the fast to the slow learners. Indirect support of these findings on the relationship between speed of learning and retention may be found in the present study and in an earlier investigation of RI by Lahey (14). Lahey found, with an interval of 17 min. between OL and relearning, that RI decreased as degree of "brightness" increased. With a 24-hr. interval the present study revealed that slow learners evidenced less RI than fast learners. However, several considerations are necessary before any conclusive statements can be made regarding the role of intelligence in RI. For example, the differences in RI between normals and defectives in the present study were not statistically significant when adjustments for trials-to-criterion on OL were made, although RI was consistently higher for all groups of normals. With a somewhat different method Cassel (4) obtained similar results. After several practice lists, he found no significant differences in speed of learning between defective and normal Ss who were matched on MA. With learning speed thus equated no significant differences in RI appeared. Thus, at the present time, it appears that the relationship between intelligence and RI, as well as that between intelligence and retention, is far from clear-cut.

Verbal learning in the present study, as in the Ellis *et al*. study (6), was found to be significantly related to test intelligence. A correlation (Pearson *r*) of -.64 between trials-to-criterion and IQ was found in both investigations. However, the regression of verbal learning was curvilinear in the Ellis *et al*. study, whereas this regression was found to be rectilinear in the present study. There were only 6 Ss in the present study with an IQ above 110, whereas Ellis *et al*. had 77 Ss with an IQ over 110. The curvilinear relationship in the latter study seems to have been mainly determined by the leveling off of the regression of learning ability on intelligence for Ss having an IQ over 110. These findings support the contention by McGeoch and Irion (20) that the size of the correlations reported in the literature are too low due to methodological difficulties. Most studies on this problem have dealt with either normal or defective _S_s with a relatively restricted IQ range. The results from the present study and those reported by Ellis _et al_. indicate that the intelligence range sampled is an extremely important variable in determining the size of the correlation between intelligence and learning ability.

It is readily apparent that crucial evidence as to the importance of both the temporal position of IT and learning ability of _S_s in the study of RI will depend upon a much more comprehensive investigation than has heretofore been attempted. Considering these variables in isolation has led to confusing and contradictory findings which permit little generalization. Future studies should attempt to investigate simultaneously other factors, such as, degree of OL and IT, retention interval, similarity of OL to IT, etc., which have generally been shown to influence the effect of temporal position of IT and learning ability upon the magnitude of RI.

SUMMARY

In the present study temporal position of IT and intellectual level were varied to determine the effect of each variable upon RI and their interaction. Two groups of 75 Ss each, normals and defectives, were trained to anticipate a list of 10 familiar nouns to a criterion of one errorless trial. Ss within each intelligence level were matched according to learning ability and assigned equally and without bias to five experimental conditions. Four of these groups were given IT either 30 sec., 5 min., 30 min., or 2 hr. after reaching the criterion. The fifth group constituted the control group which was not given an IT task.

All groups were required to relearn the experimental list 24 hr. after meeting the criterion of learning. The words were presented on a standard memory drum which exposed a word for 2 sec. with a 20 sec. intertrial interval.

The introduction of IT between OL and a later measure of retention produced a decrement in retention for all treatment groups. However, varying temporal positions of IT within a two hour period after OL did not differentially affect RI. Although these data tend to support a transfer theory of RI, the perseveration theory is not ruled out because of methodological considerations.

Slow learners evidenced considerably less RI. However,

an analysis of covariance revealed that this difference was not significant when the differential number of trials-to-criterion for the two groups on OL was considered. Thus it seems possible to conclude that differences found between slow and fast learners is partially a function of an acquisition variable rather than RI *per se*. The interaction of intelligence level and temporal position was not significant. Verbal learning ability was found to be significantly related to test intelligence (r=-.64). Typical serial position effects for fast and slow learners were found for original and interpolated learning.

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EXAMINATION AND THESIS REPORT

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Major Field: **Psychology**

Title of Thesis: **Retroactive Inhibition in Slow and Fast Learners as a Function of the Temporal Position of Interpolated Task**

Approved:

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